

## UNDER BED HITCH MOUNTING SYSTEM

### CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application is a continuation of U.S. patent application Ser. No. 16/685,080, filed on Nov. 15, 2019, entitled “Under Bed Hitch Mounting System,” which is a continuation of U.S. patent application Ser. No. 15/459,034, filed on Mar. 15, 2017, entitled “Under Bed Hitch Mounting System,” now U.S. Pat. No. 10,479,153, which is a continuation of U.S. patent application Ser. No. 13/992,331, filed Jul. 17, 2013, entitled “Under Bed Hitch Mounting System,” now abandoned, which is a 35 U.S.C. 371 national stage application of and claims priority to International Application No. PCT/US11/63922 filed on Dec. 8, 2011, entitled “Under Bed Hitch Mounting System,” which claims the benefit from U.S. Provisional Patent Application No. 61/421,156 entitled “Under Bed Hitch Mounting System” filed on Dec. 8, 2010, which are all hereby incorporated in their entirety by reference.

### FIELD OF INVENTION

[0002] The present invention is generally related to a towing apparatus and, more particularly, to an under bed hitch mounting system.

### BACKGROUND

[0003] Many vehicles are designed to transport freight, goods, merchandise, personal property, and other such cargo. An operator often utilizes a hitch assembly to connect a towed vehicle to a towing vehicle, e.g., connecting a trailer to a pick-up truck, to increase the capacity to transport the cargo. Many types of coupling devices have been developed for providing this connection between towing and towed vehicles.

[0004] It is well known to utilize a hitch to connect a towed vehicle to a towing vehicle. There are many different types of hitches that may be attached to the towing vehicle in a variety of ways, depending on the type of hitch used. For example, some fifth wheel hitches mount to the frame underneath the bed of the pickup truck while other fifth wheel hitches mount to an above bed mounting system.

[0005] Traditional fifth wheel hitches include a head assembly for receiving a king pin on a towed vehicle, a base having a plurality of legs, and one or more mounting rails. In some systems, the legs of the fifth wheel hitch are designed to be secured to mounting rails that are attached above the bed or on the bed of the towing vehicle. In other systems, the mounting rails may be fixed to the frame of a vehicle underneath the bed. For example, the mounting rails may be connected between two portions of a pickup truck frame underneath the truck bed. The mounting rails may include a plurality of apertures for receiving the legs of the fifth wheel hitch.

[0006] Corresponding openings may be cut in the truck bed and aligned with the apertures in the mounting rails. The legs of the fifth wheel hitch may be connected to apertures in the mounting rails through the openings in the truck bed, thereby securing the fifth wheel hitch to the frame of the vehicle. When the fifth wheel hitch is not in use, the legs may be disconnected from the apertures in the rails and the

hitch may be removed from the bed of the truck. Caps may be placed over the apertures to allow the truck bed to be used for other purposes.

[0007] Traditional gooseneck hitches may also mount to a towing vehicle frame beneath the load bed of the towing vehicle. A gooseneck hitch may be designed for use in a load bed of a towing vehicle similar to a fifth wheel hitch. The difference is that the gooseneck uses a ball and coupler verses a kingpin and pin receiver. Gooseneck hitches may include a mounting plate configured to connect to the frame of the towing vehicle, a receptacle in the mounting plate configured to receive a ball hitch, and a hitch ball removably connected to the receptacle and configured to engage a coupling member of the towed vehicle. An opening in the load bed of the towing vehicle may be aligned with the receptacle in the mounting plate. This may allow the hitch ball to connect to the receptacle through the opening in the load bed of the towing vehicle. The hitch balls themselves are typically removable or retractable so that when the hitch is not in use, the hitch ball may be removed or retracted when not in use. This may generally prevent obstruction of the load bed of the towing vehicle.

[0008] Towing vehicles are generally arranged to accommodate either a fifth wheel hitch or a gooseneck hitch, but not both. To convert a towing vehicle from accommodating a fifth wheel hitch to a gooseneck hitch or vice versa is time and labor intensive and inefficient. However, since fifth wheel hitches and gooseneck hitches use different mounting configurations, traditionally only one hitch can occupy this location. Therefore, there is a need in the art for an improved apparatus for towing vehicles that may allow for selectively accommodating either a fifth wheel hitch or a gooseneck hitch.

[0009] Additionally, because the mounting rails attach to the underside of the towing vehicle, there may be significant space limitations. These space limitations may cause limitations in the mounting rails that may be used. This in turn may impact the ability to attach mounting rails to the underside of the towing vehicle, including, without limitation to the frame of the towing vehicle. Therefore, there is a need in the art for improved mounting rails.

### SUMMARY

[0010] A hitch mounting system capable of attaching to a vehicle, where, the vehicle includes a frame and a load bed is disclosed. The hitch mounting system may include at least one rail, the rail being a generally continuous member, where the rail includes at least one end portion, and where the end portion is deformed in a shape capable of attaching to the frame of the vehicle. The hitch mounting system may also include at least one mounting aperture located in the rail, the mounting aperture capable of having secured thereto an accessory.

[0011] A hitch mounting system may include at least one rail, the rail being a generally continuous tubular member, where the rail includes first and second surfaces and at least one end portion on the rail, where the end portion is deformed in a shape capable of attaching to a frame of a vehicle and generally fitting between the frame and a load bed of the vehicle. The hitch mounting system may also include a receiving member attached to the rail, the receiving member capable of having secured thereto an accessory.

[0012] A hitch mounting system capable of attaching to a vehicle, where the vehicle may include a frame and a load